2013

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Squires, E. (2013) 'The effect of induced incidental disgust on attitudes towards physical disabilities: does intergroup disgust sensitivity moderate?', The Plymouth Student Scientist, 6(1), p. 239-255.
http://hdl.handle.net/10026.1/14017

The Plymouth Student Scientist
University of Plymouth

The effect of induced incidental disgust on attitudes towards physical disabilities: does intergroup disgust sensitivity moderate?

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Abstract

The present study investigated whether induced incidental disgust affected attitudes towards individuals with physical disabilities and whether intergroup disgust sensitivity (ITG-DS) would moderate this effect. Thirty seven participants were randomly assigned to either the induced disgust or control condition. They completed two measures: ITG-DS scale and an attitudes scale. As expected, manipulation of disgust was successful ($p < .001$). The pattern of means was in the predicted direction. Those who were induced to disgust (vs. control) reported more negative attitudes; as did those with greater ITG-DS (vs. lower ITG-DS). Those induced to disgust and greater ITG-DS reported more negative attitudes (vs. control and lower ITG-DS); suggesting an interaction. This extends the findings of incidental emotions and prejudice.

Introduction

If you were walking down the street and someone had lost a limb and as a result was in a wheelchair; would you stare, shout insults or physically abuse them? A disabled man in Stevenage was the target of such hate crime; a can of lager was thrown at his scooter, he was verbally insulted and when trying to escape, he was chased and nearly hit with a brick (The Comet, 2011). Another individual, who was physically disabled, was attacked on a night out and hospitalised; there appeared to be no motive for this attack (BBC, 2010). The BBC (2011) reported that hate crimes towards disabled individuals had increased in some parts of the UK. The majority of these crimes were that of verbal abuse. These reports suggest that despite campaigns to raise awareness about disability and equality there is still prejudice towards those with disabilities. The purpose of this research was to investigate whether exposure to disgust (vs. a control group) had an effect on attitudes towards people with physical disabilities and whether individual differences in disgust sensitivity (as a moderating variable) influenced the effect of disgust on these attitudes.

Baron, Byrne, and Branscombe (2006) suggested that when discussing prejudice, stereotyping and discrimination, there are three main components: cognitive (stereotyping), affective (prejudice) and behavioural (discrimination). Furthermore, prejudice is considered an attitude that comprises of the feelings that one may have towards a group. Fiske and Taylor (2008) suggested that prejudice is more than a negative or positive appraisal but that it includes specific emotions towards different groups.

Allport (1954) identified emotions in prejudice; specifically aggression. He suggested that aggression originates from frustration (which may shift from the original cause to an unrelated one, such as an outgroup) and social/cultural norms. Allport expanded this further to focus on two particular emotions; hatred and anger. Outgroups may be subject to both hatred and aggression and thus, prejudice. Yet even with Allport's focus on emotion in prejudice, this line of research did not expand until the end of the 1980's (Smith & Mackie, 2005).

Since then, researchers have investigated emotions in different ways; Bodenhausen (1993) termed two approaches "integral affect" and "incidental affect". Integral emotions refer to an emotion that is evoked by a specific group. Whereas, incidental emotions are not evoked by a social group but something else and this emotion may be transferred to an intergroup situation (Bodenhausen, Mussweiler, Gabriel, & Moreno, 2001). The present study focuses on incidental emotions.

The emotion, disgust, has received little attention in comparison to other emotions such as anger and fear (Rozin, Haidt, & McCauley, 2009). There are two main theories of disgust, one of which was proposed by Rozin and colleagues (Haidt, McCauley, & Rozin, 1994; Rozin & Fallon, 1987; Rozin, Haidt, & McCauley, 2008) who suggested that disgust was originally related to rejecting food and this protected the individual from eating food that was inedible. This and bodily wastes can be termed as core disgust. They further developed the theory to include the concept of contamination as a reason to reject food. That is, something may be considered disgusting if it has been in contact with something else that was considered disgusting. Items may be rejected on what we know about them, as opposed to it

being about taste or the fear of becoming ill. Contamination may be explained by the law of contagion, where an individual believes that "...once in contact, always in contact" (Rozin et al., 2009, p. 14), even if there is no risk of infection. Whereas, the law of similarity suggests something becomes disgusting if it looks like something disgusting (Rozin et al., 2008).

Rozin and colleagues (Haidt et al., 1994; Rozin & Fallon, 1987; Rozin et al., 2008) have since suggested that disgust is no longer simply related to food, there are many different elicitors that may trigger disgust. When explaining why physical disabilities may elicit disgust, two domains are of particular interest, these are "animal-nature disgust" and "interpersonal disgust" (Rozin et al., 2008). Animal-nature disgust suggests that an individual is disgusted by something that reminds them that humans are animals (Rozin & Fallon, 1987). Triggers that might remind us of being animals may include hygiene, death, sex or exposure to a body that goes against the normal appearance, such as wounds or deformity. Therefore, a consequence of this may be that physical disabilities elicit disgust. In fact, Haidt et al. (1994) found that when investigating individual differences in disgust, one of the biggest domains (after food, sex and bodily wastes) that elicited this emotion included physical deformity.

Interpersonal disgust refers to contact (direct or indirect) with other people; disgust may be particularly apparent if the individual is ill, a stranger, immoral or has suffered a misfortune (Rozin, Haidt, & McCauley, 1993; Rozin, Markwith, & McCauley, 1994). This was supported by Rozin et al. (1994) who found that participants reported greater dislike in wearing a used jumper from a car accident victim who had lost his leg. Despite being told that the car accident was not the individuals fault and the jumper had been washed. This could suggest that any type of contact with an outgroup such as those with physical disabilities may elicit disgust because they are considered strangers and have suffered a misfortune. Rozin et al. (2008) suggested that there isn't a common link between interpersonal disgust and animal-nature disgust; yet there is a distinct overlap between the two when explaining disgust towards individuals with physical disabilities.

Schaller and Park (2011) proposed the "behavioural immune system"; which protects the self by identifying and avoiding potential infections in the surrounding environment. Evolutionary, it would be beneficial to avoid disease. Oaten, Stevenson, and Case (2009) suggested that disgust plays an important role in the behavioural immune system. The system relies upon cues that are sensory; cues are more likely to elicit disgust if they suggest contagious diseases (Schaller & Park, 2011). However, this system may also include stimuli that do not pose any threat and this may result in false-positive errors. Park, Faulkner, and Schaller (2003) suggested that an example of a false-positive error may be someone who is physically disabled. An individual that has lost a limb which may be as a result of a car accident, isn't infectious however the system has not evolved to rationalise this and suggests disease, which may elicit disgust and avoidance.

Rozin et al. (2008) suggested that originally disgust may have transpired to avoid inedible food; which could be argued to have a biological purpose but has further developed into an "...abstract and ideational emotion" (p. 771), whereas, Schaller and Park (2011) have extended this biological, evolutionary perspective of disgust. In

terms of explaining why physical disabilities may elicit disgust, both theories can be considered despite their somewhat conflicting ideas.

An individual difference in disgust sensitivity that was relevant to the present study was proposed by Hodson et al. (2011) as “Intergroup Disgust”; this “...is characterized by reacting to an outgroup as repulsive” (p. 7). The individual sees the outgroup as inferior and are worried that they may contaminate and change the ingroup. Based on this concept, it would be reasonable to suggest that intergroup disgust may include an outgroup such as individuals with physical disabilities.

Considering the relationship between emotions and prejudice, Cottrell and Neuberg (2005) proposed that individuals may experience diverse emotions towards various social groups. They hypothesised that these groups would suggest specific threats and that in turn these would educe distinct feelings; providing a functional purpose. Various groups (e.g. African-Americans, activist feminists) were included in their study and their hypotheses were supported; diverse emotions and threats were reported towards a range of differential groups. In particular, there was a relation between distinct threats and specific feelings; threat of contamination predicted disgust. In light of these findings, an individual with physical disabilities may suggest a threat of contamination and elicit disgust. This association may apply to the incidental disgust investigated in the present study.

Tapias, Glaser, Keltner, Vasquez, and Wickens (2007) expanded the work of Cottrell and Neuberg (2005), by investigating whether an individual that was more sensitive to disgust (or anger) would report more negative attitudes towards an outgroup that is linked with disgust (or anger). Their predictions were supported; those individuals who were more sensitive to disgust reported more prejudicial attitudes towards homosexuals than those who were more sensitive to anger. The opposite effect was found for prejudicial attitudes towards African-Americans. An individual that is more sensitive to intergroup disgust may be more prejudiced towards a disgust eliciting outgroup such as those with physical disabilities.

Similar to Tapias et al. (2007), many studies have investigated incidental disgust and prejudicial attitudes towards outgroups. A lot of the research has focused upon this predisposition to feel disgust more often, known as disgust sensitivity. Inbar, Pizarro, Knobe, and Bloom (2009) measured disgust sensitivity and implicit attitudes towards homosexuals. Attitudes were measured using the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), participants were asked to categorise words that were either positive or negative with stimuli that signified heterosexual or homosexual. For example, in one trial, they were asked to classify “straight” and “pleasant” using the same key and “gay” and “unpleasant” using another key. In the second trial, they would complete the opposite to the first trial. An unfavourable implicit association of homosexuals (vs. heterosexuals) is assumed if the individual is faster at categorising gay with negative words and straight with positive words. Participants demonstrated a greater negative association of homosexuals if they were higher in disgust sensitivity. This suggests that there is a link between incidental disgust and negative associations of outgroups such as homosexuals.

Olatunji (2008) also investigated disgust sensitivity but employed an explicit measure of attitudes towards homosexuals. Those who were more sensitive to disgust

reported more prejudicial attitudes; specifically these attitudes were predicted by core disgust. These findings were similar to Inbar et al. (2009). Hodson and Costello (2007) measured disgust sensitivity and explicit attitudes towards a number of groups (such as individuals with AIDS, homosexuals, immigrants, foreigners and ethnic minorities). Those participants who were more sensitive to disgust reported less favourable attitudes towards foreigners and immigrants. Further analyses found that prejudicial attitudes towards foreigners, immigrants and groups that are considered as differing from the norm or of low-status (i.e. homosexuals, the poor) were predicted by interpersonal disgust. These findings could imply that induced incidental disgust may predict more negative attitudes towards physical disabilities as they too could be considered as differing from the norm. Furthermore, the results suggest that the relationship between incidental disgust and prejudicial attitudes may not be limited to homosexuals; but may also include other outgroups such as physical disabilities.

Extending this relationship between disgust and other outgroups; Vartanian (2010) investigated attitudes towards individuals who are obese. Participants were asked to rate how disgusting they found these individuals and their feelings towards them (the order of these tasks were random). Unfavourable attitudes towards those who are obese were predicted by disgust. Both obesity and physical disabilities are similar in terms of their noticeable physical appearance; based on the findings of this study, it would be reasonable to suggest that incidental disgust may predict negative attitudes towards physical disabilities.

Few studies have manipulated incidental disgust, however Dasgupta, DeSteno, Williams, and Hunsinger (2009) investigated this and implicit attitudes towards homosexuals. The researchers manipulated emotions by asking participants to recall a significant emotional memory (that would elicit the desired emotion in their condition – disgust, anger or neutral) and write about it. They were also shown images that corresponded to the particular emotion. After the manipulation, participants completed an IAT trial, similar to that of Inbar et al. (2009). Dasgupta et al. (2009) exposed participants to the emotion again and completed a second IAT trial. The manipulation of emotions was successful; participants that were disgusted showed greater implicit bias against homosexuals and favoured heterosexuals compared to the control group (neutral emotion). This supported the researchers "emotion-specific hypothesis"; that an incidental emotion "...will increase implicit outgroup bias only if the emotion is applicable to a specific outgroup" (p. 585).

The majority of the literature has focused upon outgroups such as homosexuals, immigrants and more recently, those who are obese. However, one study by Park et al. (2003) investigated disgust sensitivity and implicit prejudice towards those with physical disabilities. Implicit attitudes were measured using the IAT, participants were asked to sort words that were associated with either "disease" or "health" and images of individuals that were either "able-bodied" or "disabled". In the first trial, participants categorised disabled and disease with one key, and able-bodied and health with the other key. In the second trial, they completed the opposite pairings. In Asian participants there was a relationship between animal nature disgust sensitivity and associating disability with disease. The findings of this study suggest that there is a link between disgust sensitivity and negative implicit attitudes.

Another factor that was central to the present study was intergroup disgust, proposed by Hodson et al. (2011). Although this is a relatively new concept, two studies have investigated this individual difference and prejudicial attitudes. Firstly, Hodson et al. (2011) measured intergroup disgust sensitivity (ITG-DS) and explicit attitudes towards a number of groups (such as ethnic minorities, foreigners, poor etc.). Individuals higher in ITG-DS reported more unfavourable attitudes towards foreigners. They also reported more prejudicial attitudes towards other outgroups, such as drug users, the homeless and the poor. Similar findings may be reported in the present study in relation to attitudes towards physical disabilities.

Secondly; Choma, Hodson, and Costello (2012) investigated ITG-DS and explicit attitudes towards Muslims; but whether incidental emotions (happiness, fear, sadness and anger) intensified or reduced this relationship. In study one; there was a significant relation between those higher in ITG-DS and prejudicial attitudes towards Muslims. This relationship was heightened by a predisposition to experience fear or sadness. In study two, similar effects were found; however this time manipulated (exposure to films that elicited a particular emotion) fear intensified the relationship. The heightened relationship between the three variables in study two could extend to the present study. Instead, ITG-DS may moderate and influence the effect of induced incidental disgust on attitudes towards those with physical disabilities.

A review of the literature has suggested that there is a strong link between incidental disgust and prejudicial attitudes, with a focus on investigating prejudice towards homosexuals (Inbar et al., 2009; Olatunji, 2008). However, Park et al. (2003) suggested that there was a relationship between disgust sensitivity and unfavourable implicit associations of physical disabilities. Dasgupta et al. (2009) reported that induced disgust had an effect on (implicit) attitudes towards homosexuals. Despite some researchers investigating implicit attitudes, explicit attitudes were employed in this study. Recent findings have also suggested a relationship between ITG-DS and prejudicial attitudes (Choma et al., 2012; Hodson et al., 2011). Most importantly, exposure to disgust, attitudes towards those with physical disabilities and ITG-DS have not been investigated in one study. With an obvious gap in the literature; the present study investigated the effect of incidental disgust on explicit attitudes towards those with physical disabilities and how ITG-DS can moderate this effect.

Based on the findings from previous studies, it was hypothesised that participants in the experimental condition (exposed to disgust) would report more negative attitudes towards those with physical disabilities compared to those in the control condition (Hypothesis 1). Secondly, those participants that were higher in ITG-DS would report more unfavourable attitudes compared to those who were lower in ITG-DS (Hypothesis 2). Finally, ITG-DS would moderate the effect of disgust on attitudes and there would be an interaction between the conditions. That is, those who were in the disgust condition and were higher in ITG-DS would report more negative attitudes when compared to those in the control condition and lower in ITG-DS (Hypothesis 3). Participants that were higher in ITG-DS and in the control condition were expected to report more unfavourable attitudes than those that were lower in ITG-DS and in the disgust condition (Hypothesis 4); based on the recent findings that ITG-DS predicted prejudicial attitudes (Choma et al., 2012; Hodson et al., 2011).

Method

Participants

Psychology undergraduate students (*n* = 39) voluntarily participated in this study in exchange for one participation point as part of their course requirement. Two participants were omitted from the study due to a large amount of missing data. Thirty seven participants (14 male, 23 female) with a mean age of 20.5 years (*SD* = 2.90) and the majority identifying themselves as White/Caucasian (94.6%) were randomly assigned to either the control (*n* = 18) or disgust condition (*n* = 19).

Manipulations and Measures

Incidental disgust. Participants viewed a series of four images, which were repeated 5 times (20 images shown in total). Images were shown for 5 seconds and corresponded to the assigned condition. The disgust condition saw disgust eliciting images (organs, surgery on a thumb, a dirty bathroom and someone vomiting – Appendix A). The control condition saw neutral images (cave, desert, headlight and stairs – Appendix B).

Manipulation check of emotive images. Both conditions were asked to rate how disgusting they found each image on a scale from 1 - *not at all disgusting* to 9 - *extremely disgusting*.

Attitudes towards physical disabilities. The Attitudes to Disability Scale (ADS) by Power, Green, and the WHOQOL-DIS Group (2010) is a 16 item scale compiled of four sub-scales (Inclusion, Discrimination, Gains and Prospects). The scale measures attitudes towards disabilities in a personal (people with a physical or intellectual disability) or general form (non-disabled individuals). E.g. “People with a disability find it harder than others to make new friends”.

The general ADS (Appendix C) was modified for this study to include first-person tense (“I”) and a specific type of disability (physical disability). It measured individual’s attitudes about others who were physically disabled (e.g. “I think people with a physical disability find it harder than others to make new friends”) on a scale from 1 – *strongly disagree* to 5 - *strongly agree*. The modified scale also included an equal number of positive and negative items to avoid a response set (Appendix D). Following reverse-coding, higher scores on the scale indicated greater negative attitudes towards physical disabilities. Unlike Power et al. (2010) reliability (Cronbach’s alpha) was measured using all the items in the modified scale as the reliability was better than across the four sub-scales ($\alpha = .53$).

Intergroup disgust sensitivity scale (ITG-DS). Hodson et al. (2011) developed the ITG-DS scale, which measures individual differences in feeling disgust towards outgroups. ITG-DS scale consists of 8 items (e.g. “I would ask for hotel bed sheets to be changed if the previous occupant belonged to another social group”) on a scale from 1-7, ranging from *strongly disagree* to *strongly agree* (Appendix E). Following reverse-coding, higher scores indicated higher intergroup disgust sensitivity ($\alpha = .72$).

Procedure

Participants signed up to the study on the undergraduate online psychology participation pool and in exchange were granted one participation point. On arrival, participants were seated in front of a computer and were asked to read the information sheet and sign the consent form if they were happy to participate (Appendix F). After signing the consent form, participants were verbally informed by the experimenter:

"All responses are anonymous; your name is not linked with them. If you don't know the answer to a question or don't wish to answer, then leave it blank. If you have any questions throughout the study, please ask".

If participants did not have any questions, they were asked to start the study by clicking a button on the computer screen. The information sheet and consent form appeared again along with the participant's ID number, prompting them to make a note of this if they wished to withdraw from the study. All further instructions were on the computer screen.

Participants completed the ITG-DS scale and reported their demographics. All participants were then randomly assigned to either the control or disgust condition. Both conditions were informed that they would be viewing a series of images, some of which may be emotive or sensitive. Participants in the control condition viewed a series of neutral images. Participants in the disgust condition viewed a series of disgusting images. After viewing each image, both conditions were asked to rate how disgusting they found that image. Following this, participants completed some other questionnaires, which were part of a larger study. However, for this study, participants completed the attitudes towards physical disabilities scale. Once participants had finished the study, they were verbally debriefed, given a debrief sheet (Appendix G) and prompted to record their ID number that was provided again. They were asked if they had any questions about the study and were thanked by the experimenter for participating.

Results

Descriptive Statistics

Means and standard deviations for the study variables are reported in Table 1; the average score for both ITG-DS and attitudes towards physical disabilities were low. To test normality; histograms, z-scores, kurtosis and skew values were compiled for ITG-DS and the attitude scale. Following analysis of the z-scores, no values were reported outside of +/- 3.3; therefore it can be assumed that there were no outliers. The skew for the ITG-DS scale was above 1 (1.11) and the histogram suggested that it was positively skewed. The kurtosis for ITG-DS was below 1 (.69). The skew for attitudes towards physical disabilities scale was below 1 (-.38) and the kurtosis was also below 1 (.18); with the histogram suggesting a normal curve.

A Pearson correlation was conducted to investigate any association between ITG-DS and attitudes towards physical disabilities scale. A weak positive correlation was reported between the two measures, (r = +.26, *ns*, two-tailed).

Table 1: Descriptive statistics: Means and standard deviations (in parentheses) for the study variables. N = 37.

Disgust Ratings	4.40 (3.17)
ITG-DS	1.94 (.89)
Attitudes towards physical disabilities	2.22 (.32)

Manipulation Check

A 2 x 2 (Condition [disgust, control] x ITG-DS [high, low]) analysis of variance (ANOVA) was performed to establish whether manipulation of disgust was successful in the disgust condition. Averaged disgust ratings were entered as the dependent measure. Prior to running the ANOVA, a median split was conducted on ITG-DS. Participants scoring below 1.75 (median of the scale) were categorised as "low ITG-DS", participants scoring the median and above were categorised as "high ITG-DS". The output from the ANOVA showed the Levene's Test was significant, F (3, 33) = 2.93, p = < .05, therefore homogeneity of variance was violated. Consistent with expectations, there was a significant main effect for condition, F (1, 33) = 344.64, p < .001. Participants in the disgust condition reported significantly more disgust (M = 7.3, SD = 1.24) when compared to those in the control condition (M = 1.35, SD = .61). Furthermore, there was no significant finding for the main effect of ITG-DS, F (1, 33) = 1.13, or for the interaction between condition and ITG-DS, F (1, 33) = 1.37. Consequently, manipulation of disgust was successful despite individual differences.

Primary Analyses

A 2 x 2 ANOVA was performed to determine whether condition (disgust vs. control), ITG-DS (high vs. low) or an interaction between the two, predicted attitudes towards physical disabilities. Attitudes were entered as the dependent measure. Similar to the manipulation check, a median split was carried out on ITG-DS before running the ANOVA. Output from the ANOVA showed the Levene's test was not significant, F (3, 33) = 1.86, p = .156, therefore homogeneity of variance was assumed. Inconsistent with Hypothesis 1, the main effect of condition was non-significant, F (1, 33) = .23. Furthermore, there was no significant finding for the main effect of ITG-DS, F (1, 33) = 2.41, (Hypothesis 2) or for the interaction between condition and ITG-DS, F (1, 33) = .56, (Hypothesis 3 and 4). Neither condition nor ITG-DS as a main effect or as an interaction effect were successful in predicting attitudes towards those with physical disabilities.

The means within each condition are reported in Table 2. Although not significant, the direction of the means was consistent with the predicted hypotheses.

Table 2: Pattern of means: Mean scores and standard deviations (in parentheses) for attitudes towards physical disabilities in all conditions. N = 37.

		Higher ITG-DS	Lower ITG-DS
Disgust Condition	2.25 (.28)	2.36 (.29)	2.13 (.22)
Control Condition	2.19 (.35)	2.24 (.29)	2.15 (.42)
Higher ITG-DS	2.30 (.29)		
Lower ITG-DS	2.14 (.33)		

Discussion

The purpose of this research project was to investigate whether exposure to disgust (incidental disgust) would have an effect on attitudes towards those with physical disabilities and whether those attitudes would be moderated by an individual difference, intergroup disgust sensitivity (ITG-DS). The results of this study found that manipulation of disgust (i.e. exposure) was significant and thus successful; those in the disgust condition (and viewed disgust eliciting images) reported higher disgust ratings than those in the control group (viewing neutral images). Manipulation of disgust was also successful in those who were either low or high in ITG-DS. However, there were no other significant findings to support the predicted hypotheses. Condition or ITG-DS were not found to have a significant effect on attitudes and there was no significant finding for an interaction between the two. Although the results were not statistically significant, the pattern of means can be discussed. It is worth noting that overall the average mean score for attitudes indicated little prejudice and the difference between the means was marginal.

Hypothesis 1 was supported by the direction of the means; those in the disgust condition reported more negative attitudes than those in the control condition. Although this result was not significant it suggests that induced incidental disgust had an effect on attitudes. This result is relatively consistent with the theories of disgust. Rozin and colleagues (Rozin et al., 1993; Rozin et al., 2008; Rozin et al., 1994) proposed one theory of disgust that suggested physical disabilities may remind us of our animal nature and having contact (direct or indirect) with unknown individuals, particularly if they have suffered a misfortune (i.e. an amputee victim), may elicit disgust. Whereas, Schaller and Park (2011) suggested that disgust is elicited by a perceptual cue that indicates a contagious disease. Individuals with physical disabilities may be included as a false positive error, in that they suggest infection (and elicit disgust) but pose no real threat (Park et al., 2003). These theories can explain some of the current findings; those who were exposed to disgust may have reported more negative attitudes than the control group because this induced emotion was exaggerated by the pre-existing association that physical disabilities elicit disgust. The induced emotion was congruent with the elicited emotion of that outgroup, resulting in more negative attitudes.

Despite this explanation, the difference between the means for the control and disgust condition was marginal. Induced incidental disgust did not have a significant effect on attitudes; which is inconsistent with previous findings that suggest incidental disgust is significantly related to greater prejudice (Hodson & Costello, 2007; Olatunji, 2008; Tapias et al., 2007). This questions whether the difference in methodology between the studies was a contributing factor. Dasgupta et al. (2009) reported a

significant effect of (induced) incidental disgust on implicit prejudicial attitudes towards homosexuals. In comparison, an explicit measure of attitudes was employed in the present study; which may have been at risk of social desirability. Participants may have been reluctant to report any negative attitudes as it would not be considered desirable by others; this would explain the low average attitude score. Dasgupta et al. induced disgust twice over the course of the study; participants viewed emotionally stimulating images and wrote about a significant emotional memory. In the present study, disgust was induced once by viewing images, the manipulation proved successful but the effects of induced disgust may have worn off as the emotion was not reinstated.

Park et al. (2003) reported a relationship between animal-nature disgust sensitivity and associating disabilities with disease; which is consistent with both theories of disgust. However, this effect was only found in Asian participants and not in those who were European. This could explain why there were no significant findings for incidental disgust in the present study as the majority of participants were European. Furthermore, Park et al. measured disgust sensitivity, whereas in the current study incidental disgust was manipulated.

Previous studies which have reported that disgust sensitivity predicted prejudicial attitudes have varied in their methodology. Hodson and Costello (2007) employed two extensively used attitude scales, whereas the scale used in the present study was a relatively new measure and was modified. It could be argued as the majority of the studies used a much larger sample; the lack of significant findings in the present study could be attributed to the very small sample size - suggesting it was underpowered. Previous studies (e.g. Olatunji, 2008; Park et al., 2003) also employed a correlational design; incidental disgust were measured as opposed to manipulated, which was present in the current study. One of the limitations of correlational designs is that they cannot infer causation.

In the present study, those who were higher in ITG-DS reported more negative attitudes than those in the disgust condition; although this was not significant it suggests that ITG-DS may have more influence on attitudes than induced disgust. Much of the literature has focused upon disgust sensitivity and prejudicial attitudes as opposed to induced emotions. Yet there have been some conflicting findings of both incidental emotions. Choma et al. (2012) investigated incidental emotions (both sensitivity and induced), ITG-DS and attitudes towards Muslims. They reported that there was no effect of incidental emotions on attitudes towards Muslims. Hodson et al. (2011) also found that disgust sensitivity did not significantly predict prejudicial attitudes towards Muslims or homosexuals. Furthermore, Terrizzi, Shook, and Ventis (2010) investigated incidental emotions and attitudes towards homosexuals. In their second study, they manipulated disgust and found no significant effect of this on attitudes towards homosexuals. But when the attitude scale was divided into the three sub-scales, those who were exposed to disgust reported *less* negative attitudes on one of the sub-scales when compared to the control group. These findings suggest that incidental emotions and specifically disgust can produce quite inconsistent results. Therefore, the lack of significant findings in the present study may be considered as consistent with the inconsistent findings.

Hodson et al. (2011) proposed intergroup disgust, an individual difference in disgust sensitivity. Intergroup disgust suggests that an outgroup is considered disgusting based on concerns that they may change the ingroup through contamination. Individuals with physical disabilities should be included as an outgroup and elicit disgust. The pattern of means supported this (Hypothesis 2); those who were higher in ITG-DS reported more negative attitudes than those lower in ITG-DS. Despite it being non-significant, it suggests that ITG-DS influenced attitudes towards those with physical disabilities. However, the difference between the attitudes in those who were higher (vs. lower) in ITG-DS was marginal; which could question whether intergroup disgust extends to physical disabilities.

On the other hand, the marginal and non-significant difference may be due to the methodology used in the present study. Previous findings have suggested that that there is a significant relation between those higher in ITG-DS and prejudicial attitudes towards Muslims and other outgroups (Choma et al., 2012; Hodson et al., 2011). It should be noted that they also used a much larger sample and extensively used attitude scales. This difference may have contributed to the lack of significant findings in the present study. However, Hodson et al. (2011) found that there was significant association between greater ITG-DS and prejudicial attitudes towards outgroups that were related to disease. This suggests a similar finding should have been reported in the current study as previous research has suggested a relationship between physical disabilities and disease (Park et al., 2003; Schaller & Park, 2011). This could question whether physical disabilities are associated with disease and elicit disgust based on this.

As well as investigating the direction of the means; analyses also showed that there was a weak correlation between the ITG-DS scale and attitudes towards physical disabilities scale. Although the finding was non-significant; it suggests a positive relationship between the two. Previous studies have reported a significant positive correlation between ITG-DS and attitudes towards outgroups (Choma et al., 2012; Hodson et al., 2011).

It was predicted that ITG-DS would moderate the effect of incidental disgust on attitudes towards physical disabilities and there would be an interaction between the conditions. The pattern of means supported Hypothesis 3; participants that were higher in ITG-DS and assigned to the disgust condition reported more negative attitudes than those lower in ITG-DS and assigned to the control condition. Despite the non-significant findings, the results suggest that as individuals with physical disabilities may elicit disgust, being exposed to that emotion produced more negative attitudes. Those higher in ITG-DS may exaggerate this effect as they are predisposed to finding outgroups disgusting (Hodson et al., 2011); which may include those with physical disabilities. Those who were not exposed to disgust and were lower in ITG-DS reported less negative attitudes; which are consistent with this explanation.

Strangely the control condition and those who were lower in ITG-DS did not report the least negative attitudes, this was in fact the disgust condition and those lower in ITG-DS. But the differences between the mean scores in the conditions were marginal. The pattern of means supported Hypothesis 4; participants in the control condition and higher in ITG-DS reported more negative attitudes than those in the

disgust condition and lower in ITG-DS. Although the results were not statistically significant, it suggests an interaction between the conditions in the predicted direction. These results suggest that ITG-DS may only influence the effect of induced incidental disgust on prejudicial attitudes, if the individual is higher in this individual difference. When exposed to disgust and lower in ITG-DS, it appears to have a reverse effect. It is difficult to explain this finding but it could suggest that overall ITG-DS may influence prejudicial attitudes more than induced incidental disgust. As opposed to just experiencing an emotion, ITG-DS relates specifically to outgroups.

In relation to previous findings, no studies to date have investigated the effect of induced incidental disgust on attitudes towards those with physical disabilities and whether ITG-DS moderates this effect. However, Choma et al. (2012) investigated ITG-DS, attitudes towards Muslims and whether induced incidental emotions intensified or reduced this relationship (Study 2). Induced incidental fear intensified the relationship between ITG-DS and negative attitudes towards Muslims. Similar variables were measured in the current study and the pattern of means suggest that higher (vs. lower) ITG-DS heightened the effect of induced incidental disgust on prejudicial attitudes towards physical disabilities. Those in the disgust condition and higher in ITG-DS reported the most negative attitudes.

Despite the results being non-significant, they suggest that induced incidental disgust may have an effect on prejudicial attitudes as does greater ITG-DS. In terms of an interaction, those who were exposed to incidental disgust and higher in ITG-DS reported the most negative attitudes; yet the opposite was found for those exposed to disgust and lower in ITG-DS. Furthermore, higher ITG-DS appeared to have more influence on prejudicial attitudes than induced incidental disgust. Yet, the differences in means between the conditions were marginal and overall, the average (low) score suggested little prejudice towards those with physical disabilities. Which leads on to the question, why?

It could be that little prejudice was reported because individuals conformed to social desirability; it is not desirable to admit prejudices about an outgroup. Yet Vartanian (2010) reported prejudicial attitudes towards outgroups using an explicit measure. It may be that the participants (undergraduate students) in the current study were particularly open-minded about different social groups. However, prejudice towards those who are disabled may be subtle as Deal (2007) has proposed. He termed this as “Aversive Disablism”; based on Aversive Racism (Gaertner & Dovidio, 1986, as cited in Dovidio & Gaertner, 2000). Aversive Racism suggests that an individual may have unconscious negative emotions towards those who are black, but they support equality and do not consider themselves as prejudiced. Therefore, they experience a conflict between the two opposing feelings and discrimination against blacks is more subtle. Based on this approach, an individual may support equality but may also have these negative (unconscious) emotions towards those who are disabled (Deal, 2007). If prejudice towards those who are disabled is subtle, this may explain why the explicit measure of attitudes indicated little (average) prejudice. Negative attitudes towards physical disabilities may still exist but are less obvious.

There are some weaknesses of the present study. The measure of explicit attitudes towards physical disabilities reported a below acceptable level of reliability; therefore

it is questionable whether this scale would produce similar results in the same participants again. The majority of the participants were female and with an average age of 20.5 years, this makes it difficult to generalise the results to the wider population. The number of participants used in the study could also suggest that it was underpowered.

Despite the significant finding of the manipulation check which indicated that induced disgust was successful, the results must be interpreted with some caution as one of the assumptions was violated. Previous studies have induced incidental disgust by writing about an emotional memory or hypothetical plot (Dasgupta et al., 2009; Terrizzi et al., 2010), whereas in the present study participants were exposed to a series of emotionally stimulating images. This may have been a limitation as individuals could have turned away from the screen and avoided the images, resulting in a decreased exposure to disgust. On the other hand, there may have been too many images shown and individuals began to habituate; which may have attributed to the non-significant findings of induced incidental disgust.

The present study has extended the findings of intergroup disgust sensitivity – ITG-DS (Choma et al., 2012; Hodson et al., 2011), a new concept that has received little attention. A weak positive correlation between ITG-DS and attitudes towards physical disabilities was reported and with further modification of the attitude scale, it would be interesting to investigate this relationship further in a larger sample. Hodson et al. (2011) manipulated intergroup disgust and found that this produced more prejudicial attitudes towards ethnic outgroups (Study 2); future studies could employ a similar method and measure attitudes towards physical disabilities. This would provide additional evidence that intergroup disgust includes outgroups such as those with physical disabilities. Due to the little explicit prejudice reported in the present study, it may be worth investigating implicit attitudes.

Prejudice may not be just a negative evaluation, but "...is associated with specific emotions toward outgroups" (Tapias et al., 2007, p. 35). With a larger sample, future studies could investigate whether incidental emotions (e.g. disgust, pity) are specifically associated and have an effect on attitudes towards physical disabilities: and also, whether habituation to these emotions reduces prejudice. It may also be interesting to investigate whether positive incidental emotions reduce prejudicial attitudes or what effect they have in relation to negative emotions. Do positive emotions overrule the effect of negative emotions? Additionally, Park et al. (2003) reported a difference between Asian and European participants when investigating incidental disgust and implicit prejudice towards physical disabilities. This suggested a possible cultural difference, which could be further investigated.

In everyday life, individuals with physical disabilities experience prejudice and discrimination. The extreme hate crimes receive much of the media coverage and while this promotes awareness, prejudice may also be subtle and this can have as much of a detrimental effect (Deal, 2007). The present findings have implications; they suggest that an individual may not just report prejudicial attitudes because that outgroup or a member of that outgroup has educed an emotion. Instead a predisposition to experience an emotion towards outgroups (or an induced emotion) may bias attitudes. Therefore, when considering reducing prejudice, it should not only focus on the emotion that is triggered when interacting with an outgroup (or

member) but should also consider how a previously induced (or sensitivity to an) emotion may result in negative attitudes.

Overall, despite the findings being non-significant, they suggest that induced incidental disgust may have an effect on prejudicial attitudes towards physical disabilities and this may be influenced by an individual difference (ITG-DS). As this was the first study to investigate these variables, further research is required particularly in light of the contradictory findings of incidental emotions (Choma et al., 2012; Hodson et al., 2011; Terrizzi et al., 2010). This may obtain a greater understanding of prejudice and how we may reduce it in everyday life; something which can be considered important in a diverse society.

Acknowledgements

Firstly, I would like to thank my supervisor, Becky Choma for her support throughout the whole of this process – even at times of meltdown! Secondly, I would like to apologise to my family, boyfriend and friends who have had to endure all my stresses! Thank you to my Mum - who has provided endless cups of tea and support throughout everything. My Dad - who has provided jokes and kept me sane with a sense of humour. My brother, Matthew – who proof read my work and provided encouragement and support. And my boyfriend, Alex – who has seen tears and tantrums and hasn't run a mile! Finally, I would like to thank my friends for their constant support, encouragement and large glasses of wine...
I couldn't have coped without you all and I promise I will not say the D word again... Well not for a while anyway!!

References

Allport, G. W. (1954). *The nature of prejudice.* Cambridge, MA: Addison-Wesley.

Baron, R. A., Byrne, D., & Branscombe, N. R. (2006). *Social Psychology.* Boston: Pearson/Allyn and Bacon.

Bodenhausen, G. V. (1993). Emotions, arousal, and stereotypic judgments: A heuristic model of affect and stereotyping. In D. M. Mackie & D. L. Hamilton (Eds.), *Affect, cognition, and stereotyping: Interactive processes in group perception* (pp. 13-37). San Diego: Academic Press.

Bodenhausen, G. V., Mussweiler, T., Gabriel, S., & Moreno, K. N. (2001). Affective influences on stereotyping and intergroup relations. In J. P. Forgas (Ed.), *Handbook of affect and social cognition* (pp. 319-343). Mahwah, NJ: Erlbaum.

British Broadcasting Corporation (BBC). (2010). Disabled man 'attacked in street' in Aberdare. Retrieved from http://news.bbc.co.uk/1/hi/wales/south_east/8602584.stm

British Broadcasting Corporation (BBC). (2011). Disability hate crime in Brighton and Hove 'increases'. Retrieved from http://www.bbc.co.uk/news/uk-england-sussex-13281321

Choma, B. L., Hodson, G., & Costello, K. (2012). Intergroup disgust sensitivity as a predictor of islamophobia: The modulating effect of fear. *Journal of Experimental Social Psychology, 48,* 499-506.

Comet (The). (2011). Stevenage teen locked up for hate crime. Retrieved from http://www.thecomet.net/news/stevenage_teen_locked_up_for_hate_crime_1_1022726

Cottrell, C. A., & Neuberg, S. L. (2005). Different emotional reactions to different groups: A sociofunctional threat-based approach to "prejudice". *Journal of Personality and Social Psychology, 88*, 770-789.

Dasgupta, N., DeSteno, D., Williams, L. A., & Hunsinger, M. (2009). Fanning the flames of prejudice: The influence of specific incidental emotions on implicit prejudice. *Emotion, 9*, 585-591.

Deal, M. (2007). Aversive disablism: Subtle prejudice toward disabled people. *Disability & Society, 22*, 93-107.

Dovidio, J. F., & Gaertner, S. L. (2000). Aversive racism and selection decisions: 1989 and 1999. *Psychological Science, 11*, 315-319.

Fiske, S. T., & Taylor, S. E. (2008). *Social cognition: From brains to culture.* Boston: McGraw-Hill Higher Education.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*, 1464-1480.

Haidt, J., McCauley, C., & Rozin, P. (1994). Individual differences in sensitivity to disgust: A scale sampling seven domains of disgust elicitors. *Personality and Individual Differences, 16*, 701-713.

Hodson, G., Choma, B. L., Boisvert, J., Hafer, C. L., MacInnis, C. C., & Costello, K. (2011). The role of intergroup disgust in predicting ethnic prejudice. Manuscript under review.

Hodson, G., & Costello, K. (2007). Interpersonal disgust, ideological orientations, and dehumanization as predictors of intergroup attitudes. *Psychological Science, 18,* 691-698.

Inbar, Y., Pizarro, D. A., Knobe, J., & Bloom, P. (2009). Disgust sensitivity predicts intuitive disapproval of gays. *Emotion, 9,* 435-439.

Oaten, M., Stevenson, R. J., & Case, T. I. (2009). Disgust as a disease-avoidance mechanism. *Psychological Bulletin, 135*, 303-321.

Olatunji, B. O. (2008). Disgust, scrupulosity and conservative attitudes about sex: Evidence for a mediational model of homophobia. *Journal of Research in Personality, 42,* 1364-1369.

Park, J. H., Faulkner, J., & Schaller, M. (2003). Evolved disease-avoidance processes and contemporary anti-social behavior: Prejudicial attitudes and avoidance of people with physical disabilities. *Journal of Nonverbal Behavior, 27*, 65-87.

Power, M. J., Green, A. M., & the WHOQOL-DIS Group. (2010). The attitudes to disability scale (ADS): Development and psychometric properties. *Journal of Intellectual Disability Research, 54*, 860-874.

Rozin, P., & Fallon, A. E. (1987). A perspective on disgust. *Psychological Review, 94*, 23-41.

Rozin, P., Haidt, J., & McCauley, C. R. (1993). Disgust. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 575-594). New York: Guilford Press.

Rozin, P., Haidt, J., & McCauley, C. R. (2008). Disgust. In M. Lewis, J. M. Haviland-Jones, & L. Feldman Barrett (Eds.), *Handbook of emotions* (pp. 757-776). New York: Guilford Press.

Rozin, P., Haidt, J., & McCauley, C. (2009). Disgust: The body and soul emotion in the 21st century. In B. O. Olatunji & D. McKay (Eds.), *Disgust and its disorders: Theory, assessment, and treatment implications* (pp. 9-29). Washington, DC: American Psychological Association.

Rozin, P., Markwith, M., & McCauley, C. (1994). Sensitivity to indirect contacts with other persons: AIDS aversion as a composite of aversion to strangers, infection, moral taint, and misfortune. *The Journal of Abnormal Psychology, 103*, 495-504.

Schaller, M., & Park, J. H. (2011). The behavioral immune system (and why it matters). *Current Directions in Psychological Science, 20*, 99-103.

Smith, E. R., & Mackie, D. M. (2005). Aggression, hatred, and other emotions. In J. F. Dovidio, P. Glick, & L. A. Rudman (Eds.), *On the nature of prejudice: Fifty years after Allport* (pp. 361-376). Malden, MA: Blackwell Publishing.

Tapias, M. P., Glaser, J., Keltner, D., Vasquez, K., & Wickens, T. (2007). Emotion and prejudice: Specific emotions toward outgroups. *Group Processes & Intergroup Relations, 10*, 27-39.

Terrizzi, J. A., Shook, N. J., & Ventis, W. L. (2010). Disgust: A predictor of social conservatism and prejudicial attitudes toward homosexuals. *Personality and Individual Differences, 49*, 587-592.

Vartanian, L. R. (2010). Disgust and perceived control in attitudes toward obese people. *International Journal of Obesity, 34,* 1302-1307.

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